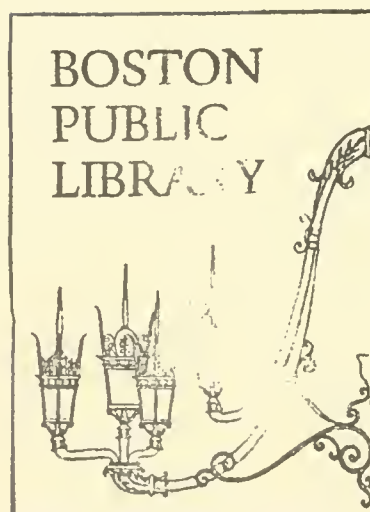


GOVDOC

BRA

930

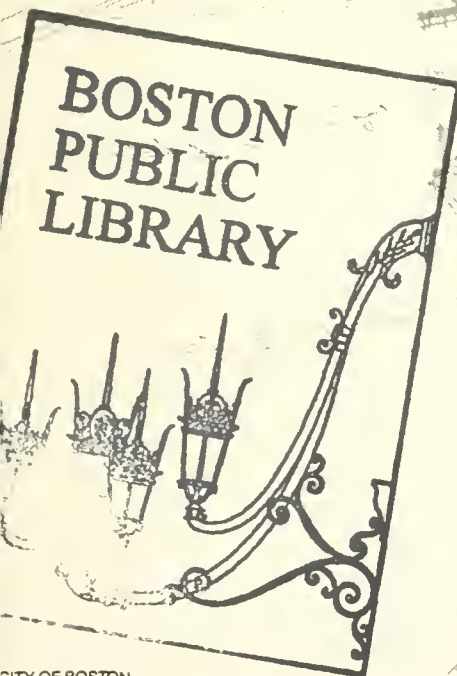
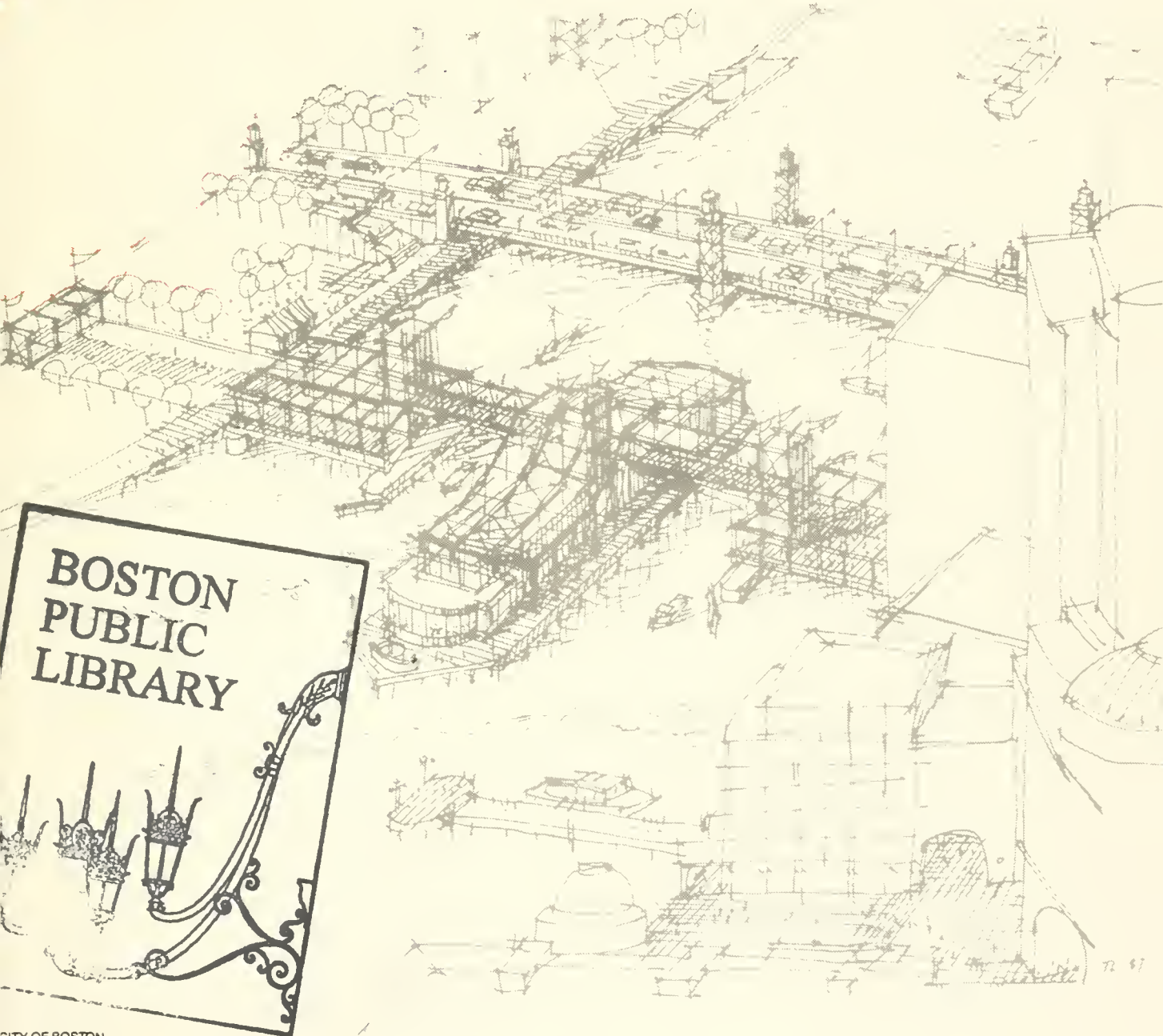


May 1988

PROPERTY OF
THE BRA LIBRARY

NORTHERN AVENUE BRIDGES STUDY

- Options for Existing Bridge
- Design Objectives for New Bridge
- Fort Point Channel Harborwalk Extension

CITY OF BOSTON
RAYMOND L. FLYNN
*Mayor*BOSTON REDEVELOPMENT AUTHORITY
STEPHEN COYLE
*Director*ROBERT L. FARRELL
*Chairman*JOSEPH J. WALSH
*Vice-Chairman*JAMES K. FLAHERTY
Treasurer

T. PT. CHAN.

364

988

Prepared by Todd Lee / Clark / Rozas Associates, Inc.

Northern Avenue Bridges Study



Harborpark



PROPERTY OF
THE BRA LIBRARY

• 13 May 1988

Mr. Robert L. Farrell, Chairman
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

PROPERTY OF
THE BRA LIBRARY

"BOSTON PUBLIC LIBRARY"

Re: Northern Avenue Bridges Study
FINAL REPORT

Dear Mr. Farrell,

We are pleased to transmit herewith the final copy of the Northern Avenue Bridges Study prepared for the Boston Redevelopment Authority by our firm working with David Dixon, SSVK, and Alistair McIntosh.

This first phase of work has benefited from many discussions with the Authority as well as representatives from other City and State agencies. In addition, a considerable body of concerned citizens as well as interested institutions have contributed, especially the forum of the Greater Boston Chamber of Commerce and the work of its Fort Point Channel committees.

We trust this report will be useful to the BRA in helping to plan the overall Fort Point Channel district and the much needed public transportation strategy for the area. We also intend it as an aid to the realization of the new bridge. Finally, we all recognize that the existing bridge is a remarkable artifact of engineering history and is symbolic of a mighty era in Boston's mercantile tradition. We believe it also now presents a unique opportunity to further enrich the pedestrian and water edge experience of Boston's growing and vibrant downtown.

Our team looks forward to continuing the effort, working to realize the potentials of Fort Point Channel for the people of our City.

Very truly yours,



Felicia R. Clark, AICP
Principal-in-Charge

ARCHITECTURE

DESIGN

PLANNING

286 CONGRESS STREET
BOSTON MA 02210
617. 451.0066
FAX 617. 451.9788

136 EAST 57TH STREET
NEW YORK NY 10022
212 . 421.4433
212 . 758.9679 FAX

| Sections | Title |
|---|---|
| I. FORT POINT CHANNEL CONTEXT and COMPONENTS | I.1 North/South Context I.2 East/West Context I.3 Bridge Design I.4 Components - the Future Channel |
| II. EXISTING BRIDGE OPTIONS | II.1 Background II.2 Option 1 - Demolish. II.3 Option 2 - Secure Closed. II.4 Option 3 - Operational. II.5 Option 4 - Secure Open. II.6 Options Summary and Comparison |
| III. NEW BRIDGE | III.1 Current Design III.2 Urban Design Objectives III.3 Project Status |
| IV. CONCLUSIONS and NEXT STEPS | IV.1 Phase 2 Recommendations IV.2 New Bridge - Urban Design Vocabulary IV.3 Existing Bridge - Re-Use Strategy IV.4 Harborwalk - Fort Point Channel Development |
| V. CLIENTS and TEAM | |



O. Contents

0.1 ILLUSTRATIONS and TABLES

| | | | page |
|--------|-------|---|----------|
| Figure | I.1 | The mouth of the Channel - from Harbor Towers | I - 1 |
| | I.2 | Bridges area - aerial plan photo | I - 3 |
| | I.3 | Existing bridge from Neptune Lobster | I - 4 |
| | I.4 | Vintage air compressors | I - 5 |
| | I.5 | Drive belts and power train | I - 6 |
| | I.6 | Existing bridge - closed | I - 7 |
| | I.7 | Existing bridge - opening cycle | I - 8 |
| | I.8 | Existing bridge - 2/3 open | I - 8 |
| | I.9 | Existing bridge - fully open | I - 9 |
| | I.10 | Concept plan - Channel uses | I - 13 |
| | II.1 | Option 1 - Existing bridge demolished (sketch) | II - 4 |
| | II.2 | Option 2 - Bridge secured closed | II - 6 |
| | II.3 | Option 3 - Existing bridge made operational | II - 8 |
| | II.4 | Option 4 - Existing bridge secured open | II - 10 |
| | II.5 | Center span open | II - 12 |
| Table | II.1 | Cost estimates - comparative summary | II - 12 |
| | II.2 | Descriptive comparison - by sub-system | II - 13 |
| Figure | III.1 | New bridge alignment - plan | III - 1 |
| | III.2 | South Boston abutment and underpass - plan | III - 2 |
| | III.3 | Section through new bridge | III - 3 |
| | III.4 | Two-level underpass - proposal | III - 4 |
| | III.5 | Major stairway (bird's eye sketch) | III - 6 |
| | III.6 | Elevation to midpoint - new bridge | III - 8 |
| | III.7 | Abutment and Underpass (eye-level sketch) | III - 10 |
| | IV.1 | New bridge (design proposals) with existing bridge behind | IV - 2 |

I.1 NORTH/SOUTH CONTEXT

Connecting the South Boston Harborfront to Downtown

Construction of the New Northern Avenue Bridge and re-use of the Existing Northern Avenue Bridge together represent critical components in the Boston Redevelopment Authority's (BRA) strategy to revitalize the Fort Point Channel area. The two bridges represent, in turn, the most important vehicular and pedestrian connections from the heart of the financial district to the Fort Point Channel.

The BRA is actively planning for this area to shape an environment in which the BRA, other public agencies and private investors will create a vibrant and highly varied district characterized by a vital mix of artists, affordable housing, new and existing light industry, extensions of the downtown office market, museums and other public attractions, and significant new public open space.

The BRA's planning for the Fort Point Channel area seeks to avoid the dislocations which have accompanied major new development in areas so close to downtown in the past, instead building on the rich mix of users and often historic structures which already exists.

Figure I.1
The mouth of the
Fort Point
Channel and the
existing Northern
Avenue
Bridge - from
Harbor Towers



The City of Boston Economic Development and Industrial Corporation (EDIC) is continuing to expand its Boston Marine Industrial Park which already houses more than two million square feet of mostly light industrial space; the BRA is working closely with the EDIC to expand the light industrial base of the larger area, which already provides more than 10% of Boston's total industrial employment, in more than two million square feet. Massport is currently planning for the Commonwealth Flats area, adjacent to the World Trade Center.

I.1

NORTH/SOUTH CONTEXT (continued)

The BRA also projects an eventual build-out of up to 7,500 new housing units in the area, a substantial number to be built under various affordable housing programs. Most important to transportation systems is the projected approximately five million square feet of new office space, a greater than 10% expansion of the downtown's current supply.

With the decline of Boston's mercantile port, from its height as the busiest in the country at the end of World War II, to its recovered position as a major regional port in 1987, and the erosion of New England and Boston's industrial base, a heavily mercantile and industrial South Boston fell into a steep decline most visibly apparent in abandonment of once flourishing warehouse and industrial buildings, rail yards, and shipping facilities. As the shipping, railway, and warehouse functions, which had at one time created a strong link to nearby downtown, declined, the area's once vital economic connection to downtown weakened. Symptomatic of this decline, the bridges which connected the South Boston Harborfront to downtown across the Fort Point Channel, including the Existing Northern Avenue Bridge, fell into disrepair; the visibly deteriorated condition of these bridges symbolized the lack of real connection and interaction between the two areas.

Given the rich mercantile history of the area, it is not surprising that the Fort Point Channel environment is visibly historic. The Channel is currently spanned by five historic steel bridges (Northern Avenue, Congress and Summer Streets, Dorchester Avenue, Old Colony), highly visible monuments to an earlier vigorous industrial technology. The Boston Wharf district, on the southern side of the Channel, represents a fine, intact collection of late-nineteenth century mercantile warehouses and industrial buildings.

The two bridges are well located to accomplish their roles as important connectors:

- **The New Bridge** will connect New Northern Avenue directly to the Central Artery in addition to the downtown street network; New Northern Avenue will serve as the primary vehicular route between downtown and the Boston Fish Pier, the World Trade Center, and additional new development in this area. The New Bridge, with four lanes, will be designed to accommodate these increased traffic volumes. Its design in a fixed position will eliminate delays presently caused by boats passing through the swing bridge.
- **The Existing Bridge** will connect Oliver Street, a principal pedestrian route into the heart of the financial district, to South Boston. The Bridge will also offer pedestrians the most direct route from the collection of attractions around Quincy Market, Rowe's Wharf, and the



Aquarium, to Museum Wharf and any attractions proposed for the Channel and the South Boston Harborfront.

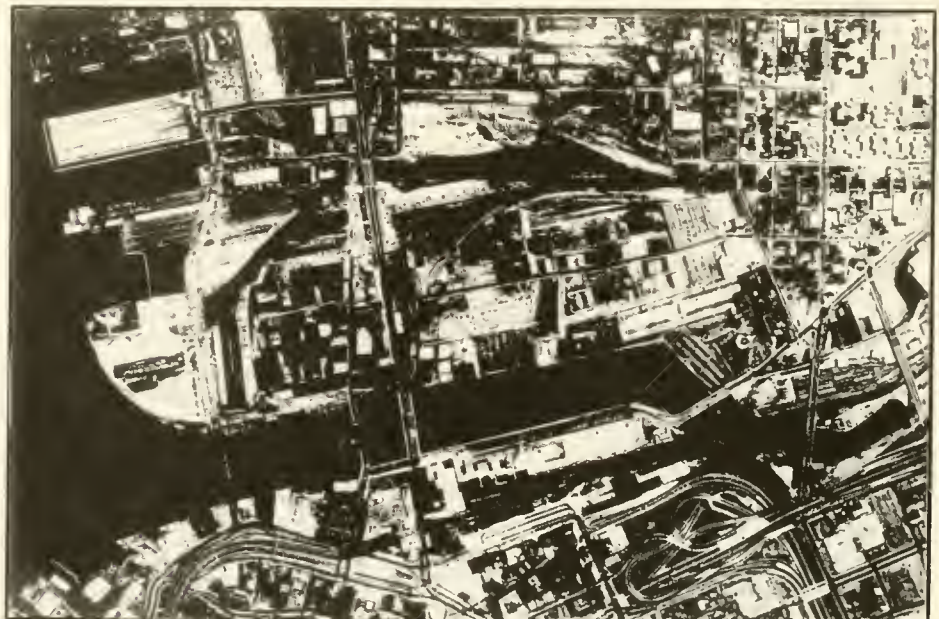
I.2 EAST / WEST CONTEXT

Critical Elements in Revival of the Fort Point Channel

The two bridges also represent critical elements in the restoration of the Channel as a vital resource for downtown, and its establishment as a major new public open space to serve both downtown and South Boston. In this context, planning and urban design for the bridges has focused on their roles as two elements in a series of improvements which will transform the Channel from an area of obvious dilapidation into one of the downtown's foremost public amenities. The series of public and public/private partnership proposals have come from diverse sources, including principally the on-going work of Harborpark by the BRA, and of the Greater Boston Chamber of Commerce (GBCof C). These proposals have been either endorsed as they stand, or have been modified to reflect current City planning objectives. Those concepts around the perimeter of the Channel include:

- Harborwalk, planned as a continuous pedestrian way circling the Channel and connecting to a much larger pedestrian waterfront system extending to Charlestown and into and along the South Boston Waterfront;
- Bridge Park (also referred to as Lobster Park), a small public open space closely linked to ongoing commercial marine operations and a small private, informal seafood restaurant and seafood retail operation, taking full advantage of its location in the Harbor's safe mooring for small boats;

Figure I.2
Mouth of the
Fort Point
Channel
- aerial plan



I. Context and Future Components

I.2

EAST / WEST CONTEXT (continued)

- Marinas, taking advantage of the Channel's excellent potential to provide shelter -- for sailboats as far as the New Bridge and smaller boats beyond the New Bridge;
- development of the Boston Edison site, incorporating retail and public amenities located directly along the Channel, connecting the Channel with the forthcoming amenities and pedestrian walkways atop the depressed Central Artery;
- extensive opportunities for public art, drawing on the resource provided by the large Fort Point Channel artists community
- a possible major new public park, including performance barges, adjacent to the Federal Reserve Bank;
- additional water taxi service to South Station

I.3

BRIDGE DESIGN

The two bridge projects, while clearly closely related, have distinctly different roles in re-establishing an integral connection between South Boston and downtown and re-casting the Fort Point Channel as a major new public amenity area and precious urban waterway...

Figure I.3
Existing Bridge
from Neptune
Lobster (South
Boston side)

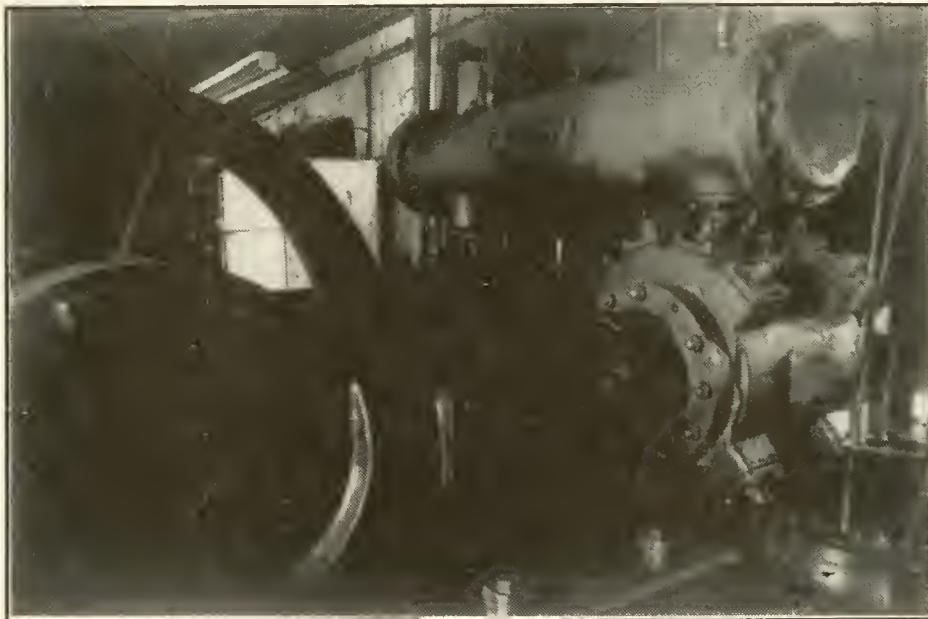


1.3

BRIDGE DESIGN (continued)

- **construction of a New Northern Avenue Bridge** will accommodate the significantly increased vehicular traffic across the Fort Point Channel. The New Bridge will create a vital vehicular link between the downtown's expanding economy and the area immediately adjacent to the Fan Piers, along New Northern Avenue and to Summer Street, planned as an extension of this downtown economy.
- **renovation of the Existing Northern Avenue Bridge** into a major pedestrian amenity will provide a highly visible connection in the City's new Harborwalk system, linking the Waterfront Park, Quincy Market, the Aquarium, Rows Wharf and other amenities in the downtown to the Children's and Computer museums. Work places and retail magnets surround the Fort Point Channel.

Figure I.4
Air compressors
Existing Bridge



The BRA's urban design proposals for both bridges have focused both on their proximity and shared environment and on the very different objectives for each bridge:

- both bridges should physically accommodate, and connect to Harborwalk, which will pass over the Existing Bridge and under the southern abutment of the New Bridge;
- paving, lighting, railings, etc.-- of both bridges should be harmonious with the design character of Harborwalk,

1.3 BRIDGE DESIGN (continued)

particularly the immediately adjacent walkway, Lobster Park, and Museum Wharf

Figure 1.5
Compressor
drive belts-
Existing Bridge



- the New Bridge's architectural character should be compatible with the nineteenth century bridges which currently span the Fort Point Channel
- ...and should demonstrate by the high quality of its design and finishes that it represents an important gateway into an area of the South Boston Harborfront which is now ready to take its place in the larger downtown economy
- the Existing Bridge should take full advantage of its landmark form and location to become a major public waterfront attraction, a significant event in the series of public amenities which is beginning to ring the harbor, collectively constituting Harborpark
- ...the Bridge should be devoted to a highly public use, in the spirit of a "maritime" Haymarket or other equally popular attraction, taking direct benefit from its critical location within a fifteen minute walk of more than thirty million square feet of first class office space
- ...new construction, on the existing Bridge and replacing the headhouse, should respect the Bridge's historic character

•...and should constitute an architectural "jewel", appropriate to the Bridge's unparalleled location looking out to, and highly visible from, the harbor and downtown skyline. The Bridge should shine at night as a beacon announcing the Fort Point Channel

•...the new Bridge should be a highly visible presence, and formal expression, directly on Atlantic Avenue and Sleeper Street, to ensure that the Bridge's prominence in downtown and the South Boston Harborfront matches its importance as a major pedestrian connection and attraction

I.4 COMPONENTS- THE FUTURE CHANNEL

The Concept Plan (Figure I.10), an outgrowth of the work of the Greater Boston Chamber of Commerce's Fort Point Channel Project begun in 1982, illustrates a future for the Fort Point Channel as a downtown center for public open space and recreation, a major new resource and "seam" between downtown and South Boston. The two bridges, as the gateways to the Channel and visually highly prominent landmarks for those approaching or using the Channel, represent very important elements in the series of individual components which collectively will fulfill the Channel's immense potential. Each of these components represents a specific, implemental, "stand-alone" project which can proceed on its own schedule; in several cases the projects already have sponsors and are moving toward realization. However, all of the components will benefit to a substantial extent by realization of the larger concept, collectively forming a truly impressive new public environment.

The major components (identified on the Concept Plan- Figure 1.10) include:

Figure I.6
Existing Bridge,
closed position,
and Harbor
Ferries;
beyond- Neptune
Lobster, McKee
Lighter,
Museum Wharf;
foreground-
Rowes Wharf
with ferries.



Figure 1.7
Existing Bridge
and opening cycle



A. The Existing Northern Avenue Bridge (described in more detail in this report):

sponsorship: owned by City of Boston Department of Public Works; includes public/private potentials

status: Phase I, initial concepts, completed; Phase II will focus on specific recommendations

role in larger Channel revitalization:

- major public activity spaces
- principal pedestrian connection between South Boston/downtown
- transform visually blighting influence into visual magnet
- eliminate traffic problems created by poor operational condition

Figure 1.8
Existing Bridge-
2/3 open



A. Existing Northern Avenue Bridge (continued)

objectives:

- the Bridge should be fixed in an open position, encouraging sailboats to pass beyond and emphasizing pedestrian use
- continuous, convenient, pedestrian access should be provided across the Bridge
- the Bridge should be devoted to a public use, emphasizing highly popular, rather than expensive, attractions
- new, architectural "jewel-like" construction should replace the existing head house
- allow sail boats to surround the Bridge, enhancing its character and public-use potential, a flip-up pedestrian bridge, such as those provided for London's St. Katharine's docks, should be provided across the sail channel
- the Bridge should be provided with an address on Atlantic Avenue and Sleeper Street, possibly including small public parks with structure facing Atlantic Avenue and Sleeper Street
- entry onto the bridge should receive special design attention, as a gateway to South Boston and the Fort Point Channel area

Figure I.9
Existing Bridge-
Full open,
waterways clear



B. New Northern Avenue Bridge (described in more detail in this report):

sponsorship: public

status: engineering underway by State DPW as agent for the Federal Highway Administration; BRA's urban design study-Phase I, initial concepts, completed; Phase II will focus on specific recommendations for appropriate context

role in larger Channel revitalization:

- vehicular access
- highly prominent public improvement

**B. New Northern Avenue Bridge
(continued)**

objectives:

- appropriate architectural character, in keeping with existing historic bridges spanning the Channel
- connect to Harborwalk on both sides of the Channel
- provide appropriate passage for Harborwalk across and below the Bridge on both sides of the Channel

C. Harborwalk (described in more detail in this report):

sponsorship: public and private

status: implementation by BRA

role in larger Channel revitalization:

- provide continuous public access to and along the water's edge
- design a high quality public environment with a variety of recreational activities
- link individual public amenities into a single, identifiable, system
- enhance the visual character of the Channel and Harbor

objectives:

- continuous pedestrian way encircling the Channel
- direct links to public transit at South Station and Aquarium
- provide connections to a much larger Harborpark pedestrian waterfront system
- allow pedestrians to walk as near to the water as possible
- avoid displacing water-dependent uses
- provide superior level of finishes consistent with the Harborwalk system as a whole, thereby also providing the Channel with a unifying and consistent image

D. Bridges Park:

sponsorship: public

status: BRA proposal to link the new Northern Avenue Bridge to wateredge circulation. A different plan, called Lobster Park, original work of the GBC of C, creates more parkland.

role in larger Channel revitalization:

- a small public open space supportive of ongoing commercial marine operations
- new amenity in the chain of public spaces linking Museum Wharf to the Existing Northern Avenue Bridge, and downtown attractions

objectives:

- open directly to existing facilities, avoid displacing or interrupting their operations
- provide landscaping, emphasizing harbor view and pedestrian access to new Northern Avenue Bridge

E. Museum Wharf:

sponsorship: Children's and Computer Museums

status: existing conceptual proposals by Museums, Chamber of Commerce Fort Point Channel Project and this report



E. Museum Wharf (continued)

role in larger Channel revitalization:

- major new public activity area and amenity, expanding the role of the Museums in the Channel's public environment

objectives:

- encourage performance facilities and activities associated with the museums
- finishes and character should be compatible with Harborwalk

F. Marinas and Public Landings:

sponsorship: public and private operators

status: concept proposal by potential operators, developed by the GBC of C Fort Point Channel Project and shown as more extensively developed in this report

role in larger Channel revitalization:

- major new recreation resource in badly under-served area
- take advantage of the Channel's status as one of the best natural shelters in the Inner Harbor (the "safe hole")

objectives:

- sail boat marinas as far as New Bridge
- power boat marinas beyond New Bridge

G. Channel Park:

sponsorship: public

status: BRA developed plan shown here. Earlier concept plan in GBC of C Fort Point Channel Project.

role in larger Channel revitalization:

- new public activity area and amenity constituting a new major park
- new major park for the Financial District
- significantly enhance public-use potential of landscaped Federal Reserve property

objectives:

- span both sides of Dorchester Avenue
- performance facilities--located on barges
- extensive landscaped area, open for public use
- finishes and urban design character compatible with Harborwalk

H. Boston Edison Site:

sponsorship: private

status: concept proposal developed for this report; related concepts proposed in other downtown and Channel area studies

role in larger Channel revitalization:

- replace vacant, visually-blighted lot and surface parking area with high quality new private development and public amenities

objectives:

- new building compatible in scale and character to existing nearby



I. Context and Future Components

H. Boston Edison Site (continued)

- older buildings along the water
- taking advantage of requirement for permanent easement between Channel and Atlantic Avenue
- taking advantage of proximity to South Station
- a new limited-use private street, with special paving, to give the new development and associated public uses an address on the Channel
- retail and public uses facing the Channel
- pedestrian connection from the Channel/Harborwalk to Atlantic Avenue
- finishes and urban design character compatible with Harborwalk

I. Public Boating:

sponsorship: public, private operators

status: Original concept by BEME, later developed by GBC of C endorsed by this report.

role in larger Channel revitalization:

- significant public recreational use

objectives:

- open to entire public
- ticketing, docking facilities coordinated with other Harborwalk activities

J. Public Art:

sponsorship: public, Fort Point Channel Artists

status: specific original concept by GBC of C Project and and endorsed in this report

role in larger Channel revitalization:

- enhance public environment
- utilize, and advertise, significant Channel resource

objectives:

- locate throughout new improvements

K. Additional Water Taxi Service to South Station:

sponsorship: private operators

status: concept developed from many sources, especially the Water-borne Transport Group, and furthered by potential operators' report

role in larger Channel revitalization:

- expand public use of, and access to, the area; expand water-borne transit

objectives:

- location and character of ticketing, waiting, and docking facilities coordinated with other proposals and Harborwalk

II. Existing Bridge Options



Figure 1.10
Concept Plan

Existing Bridge- proposal
New Bridge- proposal
Harborwalk- in process
Bridge Park- proposal
Museum Wharf- in process
Marinas- proposal
Channel Park- proposal
Edison Site- proposal
Public Boating- proposal
Public Art- proposal
Neptune Lobster- existing
Hook Lobster Site- proposal
Tea Party- existing
Barge restaurant- existing
Water Taxi- proposal
Rowing Club- existing
Cross-Channel transit- proposal*
Seaport Access Road**

This proposal builds upon the work of the BRA's Harborpark effort, early work by the Boston Educational Marine Exchange, continuing work of the GBC of C's Port Point Channel Project, and that of the various institutions and private initiatives

No transit alignment is shown since at this printing the MBTA and its advisory committee has not selected a definite alternative, either aerial, surface or underground.

The crossing and impacts of the Seaport Access Road are not shown since the preliminary design revisions are being substantially modified



II. Existing Bridge Options

II.1 BACKGROUND

One of the most visible and prominent existing artifacts on Boston's waterfront, the existing Northern Avenue Bridge, is also in the worst condition. Its frequent operational breakdowns have inconvenienced the thousands of commuters and pedestrians who utilize the Bridge daily between South Boston and Boston's downtown and financial districts.

Yet the Bridge symbolizes Boston's history as an industrial center for an expanding nation, and the ingenuity of its craftsmen and their leadership role in the Industrial Revolution. The time has come to address this problem. The objective is to make use of this historic artifact as best we can, while recognizing its obsolescence as a major link in Boston's downtown circulation routes, and within the context of the growing vitality and importance of the Fort Point Channel district to the City's economy and residents.

The following section outlines four basic options; we trust that refinements and additional ideas will emerge, particularly in the area of re-use possibilities. The Bridge is a fine historic structure in an unparalleled location for Boston's waterfront and Harbor.

Condition of the Existing Bridge

Referring to the useful life of the existing Northern Avenue Bridge in either a fixed or swing mode, one has to consider that the bridge was originally constructed in 1906, 82 years ago. This is considered to be beyond the useful life of most structures. Critical maintenance to the machinery and structural elements carried forth through the years has maintained this structure as a viable link between Boston and South Boston. Time combined with the salt water exposure has taken its toll.

Piles and Piers

The bridge is founded on wood friction piles driven into the typical Boston blue clay. The tops of these piles are far below the Channel bottom. Based on experience of inspection of similar piles, it would be sound to assume that these piles are in good condition. Above the piles and extending upward 14 feet to the underside of the granite portions of the piers is a cast-in-place concrete base. This is typical for all the piers including the center drum pier. In the mid-'70's, divers inspected all of the piers and reported that the concrete portion had gone punky. This means that the concrete has lost its inherent ability to sustain load. Samples brought to the surface could be broken in one's hands. Such a condition makes the bridge susceptible to heavy vibration such as an earth tremor. Tests indicate that the punky condition extends throughout the pier. If the bridge were to be kept in service, for any reason, each pier would have to be encapsulated with reinforced concrete and steel sheeting. This is a major item of work to be accomplished and it will be expensive. The granite portions of the piers should have all their joints raked and pressure grouted with new mortar.



Support Structure

The term support structure is used to define those girders that bear upon the drum girder that form the main support for superstructure trusses and roadway system. These girders are in very bad repair and need replacement. In order to accomplish this a bracing and jacking of the superstructure will be necessary. The jacking may be accomplished from barges or from the drum pier. In either case, the work would be considered a major effort. The drum girders require repairs which can be done without their removal.

Superstructure

The superstructure of the bridge requires a complete sand blasting. When this is done it will be revealed that many of the beams and girders supporting the roadway should be replaced if an extended 20 or 30 year life is expected. Since 1974, structural members have been individually replaced on the basis that the life of the bridge was to be extended for only five (5) years. The bottom chord of the trusses require extensive rehabilitation of each joint. The natural elements of the seaside environment have caused severe corrosion at the joints. The original design of these trusses is for pin connected joints, free to move but many of the joints are so frozen that they cannot move. This induces additional stresses into the individual chord members, a condition which has been recognized for some time but allowed to exist because the bridge was to be replaced. The above portions of the trusses are in fair to good condition. Some diagonals need replacing and joint plates should be renewed but in general the constant exposure to the air, sun and rain have preserved the upper portions of the trusses much better than the below deck portions.

Roadways

Depending on the future of the bridge, work must be done on the roadway surfaces both on the swing span and the approach spans. The work that has been done over the last twenty (20) years has been of a maintenance variety. For an extended life it would be recommended that a complete roadway replacement be included. One must be careful to select a decking for the swing span that would not overload the structure.

Closing- Restriction to Navigation

It may be possible to fix the bridge in a closed position. The consequence of doing so is a severe restriction to navigation. Boats the size of lobster boats, could pass under during low tide periods. Larger ships or boats with masts would be precluded from doing so. The current 8' clear at MHW represents half of the proposed new bridge clearance.

The Fort Point Channel is presently open for navigation from the harbor to Summer Street Bridge. From a practical point of view, boats cannot pass the Congress Street Bridge. To have the entire Channel closed would take an Act of Congress. It is suspected that there may be severe local objections to doing this. Closing the bridge would eliminate the need to rehabilitate the bridge machinery, pier, draw-



II. Existing Bridge Options

tender's house and fenders. It would also eliminate the need for draw- and gate-tenders themselves, a large continuing expense.

All of the bridge machinery requires rehabilitation. The bridge is air operated. The existing compressors are very old and require constant maintenance and have to be replaced. They are located in the draw-tender's house at the downstream end of the center pier. It would be desirable to have the tenders, compressors, and controls for the bridge located closer to the bridge but the bridge swing makes this impossible. The conversion to an electric operating bridge would eliminate the need for the large air receivers and may allow the construction of a small draw-tender's control house to be built in the rigging of the bridge. This conversion would be very expensive. In addition, the drive motors and end pistons require a complete rehabilitation. If the bridge were to be modernized, the manual draw bar mechanism actuated by the gate tenders should be replaced by a control mechanical operated unit. The existing gates should be replaced with automatic operating gates and a TV surveillance system combined with traffic control devices should be installed. This would eliminate the need for gate-tenders.

The support bearings of the structure all need a thorough cleaning by sand blasting. A few bearings need replacement. The supporting bearing of the fixed approach span at the downtown ("Hook's Corner") side requires a complete straightening and rebuilding.

The center pier and the fender system have deteriorated beyond repair, especially at the upstream end. The fender along the face of pier 2 also is in very bad condition and requires complete replacement. The waterway between pier 1 and the center pier is not active and should be closed by the construction of dolphins and fender guards.

In addition to all of the above, the entire structure requires the application of a new modern paint system including sand blasting down to bare metal.

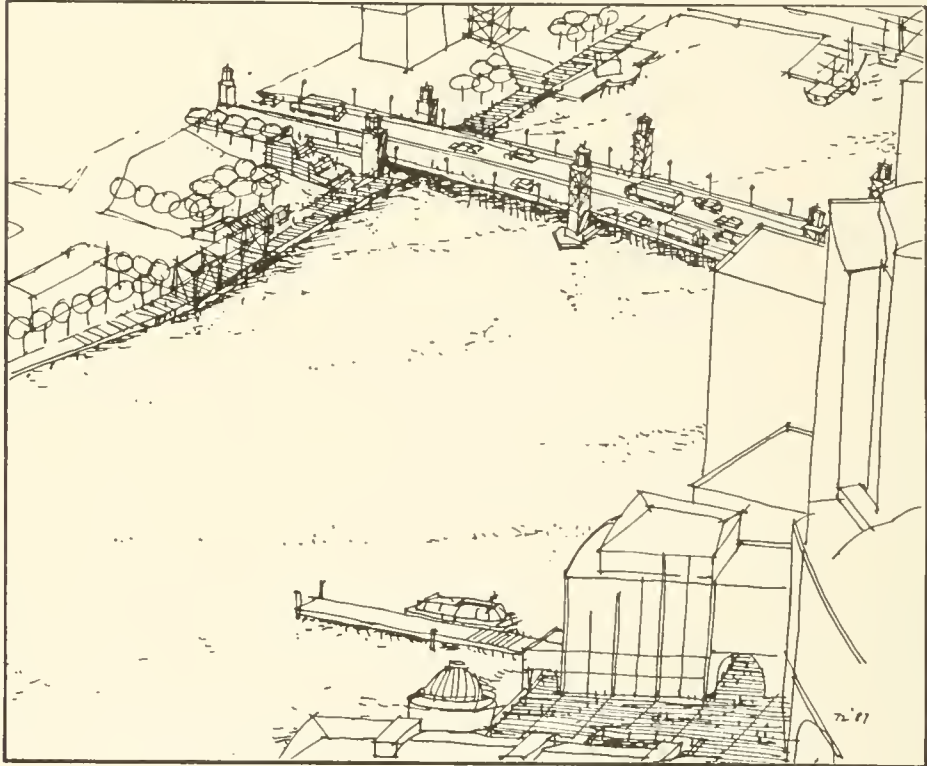


II.2

OPTION 1 - DEMOLISH

Option 1 considers the total demolition and removal of the existing bridge structure after construction of a new bridge upstream has been completed. This removal would include the substructure and the superstructure of the draw span and three approach spans, from the Boston abutment to the South Boston abutment.

Figure II.1
(Option 1)
New Bridge only-
Existing Bridge
demolished



Removal to the Mud Line

To satisfy the U.S. Coast Guard requirements, the four substructure piers would need to be completely removed down to the mud line of the channel. The abutment structures on the Boston and South Boston side of the channel would remain in place. The timber fendering system and center wharf area including the draw tenders house and all timber piles would require removal.

"Adverse Effect" on Historic Properties

In addition to procurement of the appropriate permits required by the Coast Guard and the Army Corps of Engineers for the work under this option, documentation would be needed to satisfy the requirements of the Advisory Council on Historic Preservation. The Northern Avenue Bridge is listed in the State Register and is eligible for listing in the National Register of Historic Places. The type of work indicated under this option would necessitate a full review in compliance with Section 106 of the National Historic Preservation Act (NHPA). Total demolition of the bridge structure would constitute an "adverse effect" on the historic property based on NHPA guidelines. Required documentation would include the production of archival quality photographs and preservation of original construction drawings for

II. Existing Bridge Options

Option 1 - Demolish (continued)

submittal to the National Archives.

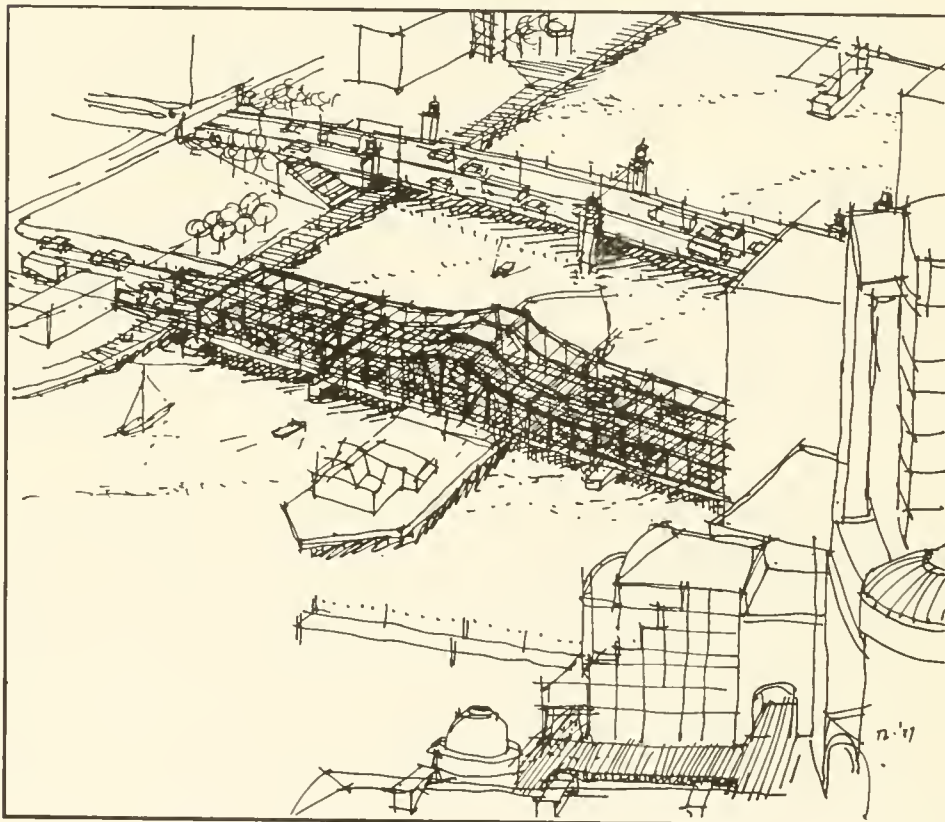
The cost for the total demolition and removal of the existing bridge structure is estimated at approximately \$2,600,000. (Table II.1)



OPTION 2 - SECURE CLOSED

Option 2 considers permanently securing the bridge in a closed position and rehabilitation of the structure to maintain vehicular traffic for a 30-year life. As indicated in the Existing Condition Report, the bridge is 82 years old, which is considered to be beyond the useful life of most structures. In order to extend the life of the bridge 30 years, major structural rehabilitation would be required.

Figure II.2
(Option 2)
Bridge secured
closed



One of the biggest limitations to the integrity of the existing structure is the condition of the concrete pier foundations. The concrete presently is in poor condition and is susceptible to continued deterioration.

The Boston abutment and the piers, including the central drum pier, would need to be encapsulated with reinforced concrete and steel sheeting. The joints of the upper granite portions of the piers should be cleaned out and pressure grouted with new mortar. In addition to the substructure, the superstructure would require major rehabilitation to extend the life of the bridge. The main support girders which transfer the truss loads to the drum girder are in poor condition and need replacement. The floor beams would need to be replaced as well. With the elimination of the movability of the bridge, a new deck system which is more durable than the present should be installed. This would necessitate replacement of stringers and still beams as well. Required truss rehabilitation would include dismantling and rebuild-

Option 2 - Secure Closed (continued)

ing of lower chord connections. A thorough inspection of the upper chord would be necessary to determine the extent of required rehabilitation. It is anticipated that the pin joints will need to be rebuilt and tightened in order to reduce the excessive deflections that presently exist. Included in the rehabilitation of the structure should be the application of a modern paint system.

Because the Northern Avenue Bridge is a major link between Boston and South Boston, maintenance of traffic over the bridge during construction would be mandatory. This would necessitate construction staging.

8' Clearance at MHW

One drawback that must be considered in this option is the limitation of navigation under the bridge. With the bridge in the closed position the vertical clearance is approximately 8 feet at mean high water. For this option to be realized, the Coast Guard and Army Corps of Engineers must be satisfied that the limited headroom clearance will be sufficient to serve the interests of navigation in the Channel. Obtaining a special permit to permanently fix the bridge in the closed position would take an Act of Congress.

Upgrading the existing bridge would no doubt trigger a reexamination of the need for the new bridge. Certainly the design of the new bridge, with a clearance of 16' at MHW, would no longer make sense if a lower bridge were fixed permanently in front of it. It is likely that federal funding for the new bridge would be jeopardized.

The cost for the work required for this option is estimated at approximately \$6,300,000.



II.4

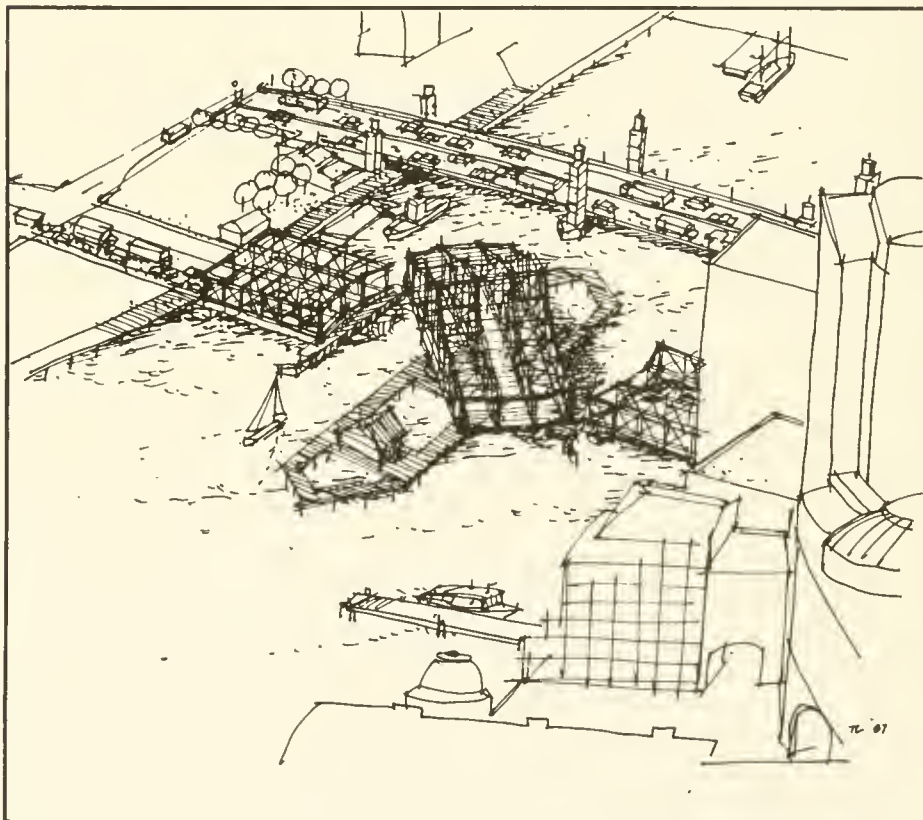
OPTION 3 - OPERATIONAL

Complete Rehabilitation

Option 3 considers rehabilitation of the structure to maintain vehicular traffic and restoration of the operational system for a 30-year life.

The bridge structure will require major rehabilitation as outlined in the discussion for Option 2. Once repairs to the structural support framing have been accomplished, the roadway deck should be replaced with new grating, preferably of high strength steel. In addition, restoration of the fender system would be required for protection of the bridge.

Figure II.3
(Option 3)
Existing bridge
made
operational



Decision to Eliminate Air Driven Required

The present operational system for the bridge has several deficiencies and would require rehabilitation to enable an extended life. The two existing air compressors are very old and require constant maintenance to keep the bridge operational. A decision will be required whether to upgrade the present air driven system or to convert to one driven by electric motors. As discussed in the Existing Condition Report, conversion to electric power would allow placement of the operating machinery within the central tower framing of the bridge. This would eliminate the need for the large air receiver tanks and the existing draw-tender's house. A smaller draw-tender's control house would be built within the bridge framework. Conversion to an electric operation would carry a very high initial cost, but would require

Option 3 - Operational (continued)

much less maintenance over the life of the bridge. If the present air driven system were to be restored, all new machinery would be required. In addition, operation of the bridge would still require bridge tender personnel of three persons for two 8-hour shifts per day. Considering average bridge-tender's wages, this represents an annual operational cost of approximately \$200,000 per year.

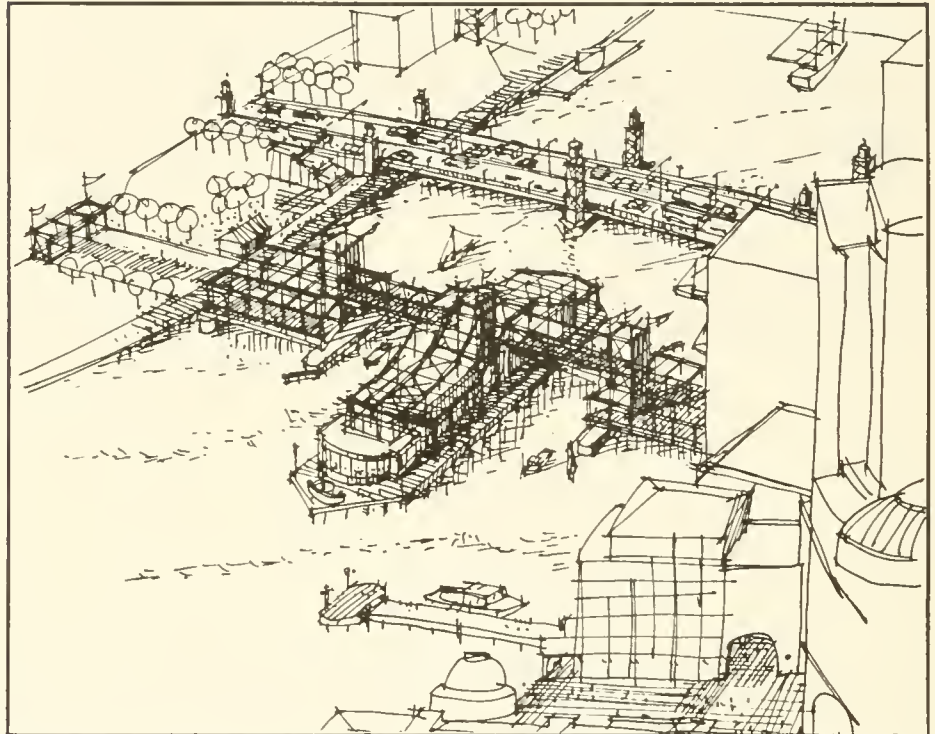
Rehabilitation cost for this option, including conversion to an electric operating system, is estimated at approximately \$7,800,000.



OPTION 4 - SECURE OPEN

Option 4 considers permanently securing the bridge in the fully open position after construction of a new bridge upstream has been completed. The bridge would be converted to an alternate use structure, accessible from either side by pedestrian walkways.

Figure II.4
(Option 4)
Existing bridge
secured open



Rehabilitation Still Required

Although the existing bridge would no longer be used for vehicle traffic, the structure would still require rehabilitation as outlined in the discussion for Option 2 to a somewhat lesser extent. In addition to the rehabilitation of the existing pier foundations, construction of new piers both upstream and downstream would be required to support the presently cantilevered ends of the open bridge. Provisions for expansion of the structure at these new piers would be required to allow the bridge to operate as it was designed to. The existing steel grating deck would be replaced with a new flooring system which would accommodate the intended use of the structure. The fully rehabilitated center span in this fixed open position would have a load carrying capacity of approximately 100 pounds per square foot. The introduction of additional loads, depending on intended future use, would require additional structural modifications which are beyond the scope of this option to consider.

Two New Piers

Access to Open Swing Span

Accessibility to the open swing span would be required for whatever its intended purpose. This could be accomplished by the construction of pedestrian walkways at an elevation sufficiently high to provide the same vertical clearance as the new highway bridge structure upstream. Alternatively, pedestrian drawbridges, counterweighted

II. Existing Bridge Options

Option 4 - Secure Open (continued)

and manually operated by the user (such as at St. Katharine's Docks, London) could be installed. Navigation in the Channel would be maintained under this option and therefore the fender system would need to be restored.

Air compressors, receiver tanks, piping and all operational equipment could be removed. The existing draw-tender's house could also be demolished. Any future use of the wharf area presently occupied by the draw-tender's house would require a new pile foundation. Rehabilitation under this option would also be subject to the requirements of the Advisory Council on Historic Preservation as outlined in the discussion for Option 1.

The cost for rehabilitation of the structure, exclusive of new construction related to the specific needs of re-use (pavilions, etc.), is estimated at approximately \$5,700,000.

II. Existing Bridge Options

II.6

OPTIONS SUMMARY

The component costs for each option are summarized and compared below. Costs are in 1987 dollars.

Table II.1
Cost Estimates

| | Option 1 <u>Demolish</u> | Option 2 <u>Secure Closed</u> | Option 3 <u>Operational</u> | Option 4 <u>Secure Open</u> |
|-------------------|-----------------------------|----------------------------------|--------------------------------|--------------------------------|
| Sub-Structure | \$ 950,000 | \$ 800,000 | \$ 800,000 | \$ 1,100,000 |
| Support Structure | 200,000 | 1,000,000 | 1,000,000 | 1,000,000 |
| Super-Structure | 1,200,000 | 3,200,000 | 2,800,000 | 1,800,000 |
| Roadway: | | | | |
| Bridge | - | 700,000 | 900,000 | 400,000 |
| Highway Approach | - | 200,000 | 200,000 | - |
| Machinery | 250,000 | - | 1,500,000 | 400,000 |
| Fender System | 50,000 | 50,000 | 200,000 | 200,000 |
| Finishes | - | 400,000 | 400,000 | 400,000 |
| New Construction | - | - | - | 200,000 |
| | | | | (elev tower strct) |
| | | | | 200,000 |
| | | | | (ped bridges) |
| TOTAL (millions) | \$2.4 to 2.9 | \$6.1 to 6.6 | \$7.5 to 8.0 | \$5.4 to 5.9 |

Figure II.5
Center span and
South Boston
stub (detail)



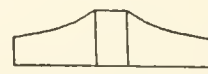
II. Existing Bridge Options

II.6 OPTIONS SUMMARY

Below is a comparison of each sub-system (component) of the existing bridge , and how it is affected by each of the four options:

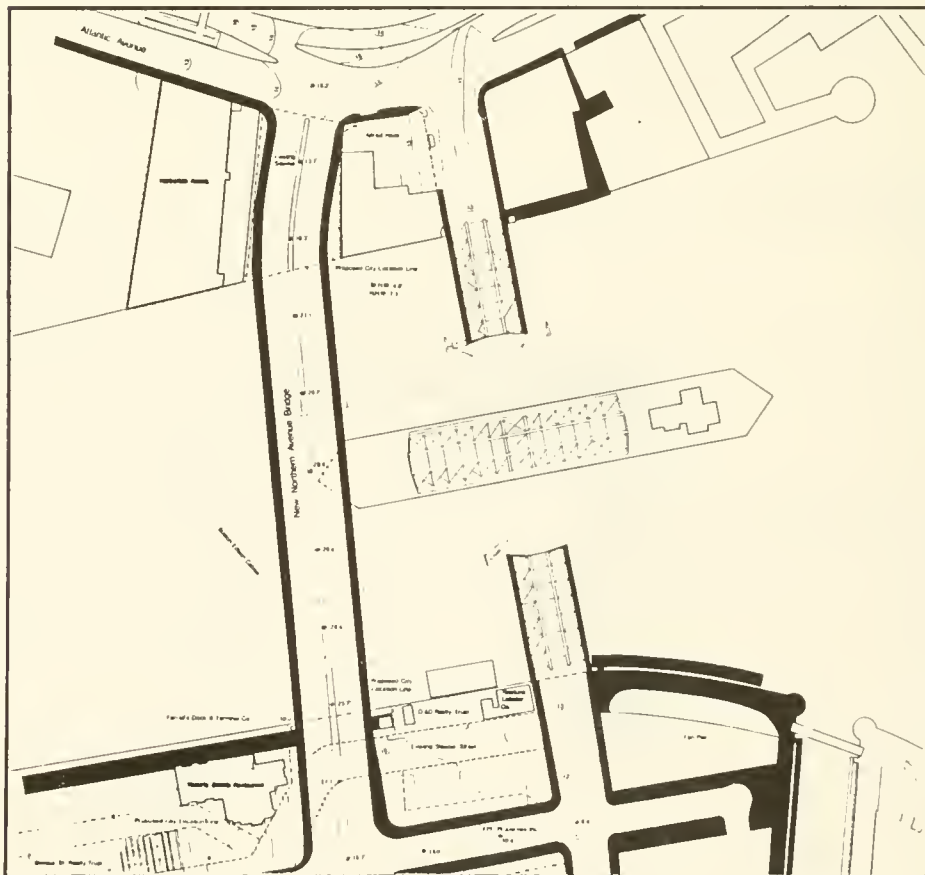
Table II.2
Descriptive
Comparisons

| Sub-System | Option 1 DEMOLISH | Option 2 FIX CLOSED | Option 3 OPERATIONAL | Option 4 FIX OPEN |
|-------------------|--------------------------------|--|---|--|
| Foundation | Remain in place | ok | ok | ok |
| Substructure | Remove to mud line | Rebuild- new sheeting and concrete | Rebuild- new sheeting and concrete | Rebuild- add 2 new piers |
| Support Structure | Demolish and dispose | Rehabilitate | Rehabilitate | Rehabilitate |
| Super-Structure | Demolish- save fragments | Rebuild for heavy traffic | Rebuild for moderate traffic | Rebuild for light, fixed loads |
| Roadway | Demolish and dispose | Rebuild for heavy traffic | Rebuild with draw section lightweight | Walking and surface for re-use |
| Machinery | Remove (exhibit?) | - (leave in place) | Complete renew or replace | Elevator to pedestrian bridge |
| Fender System | Remove to mud line | Simplified | Replace | Replace |
| Finishes | - | New paint | New paint | New paint |
| New Construction | - | - | - | Elevator and ramps, pedestrian bridge spans |



The New Bridge design - as currently proposed - is in conformance with Federal Highway Administration (FHWA) standards. While the State DPW has instructed its consulting design engineers to produce an elegant concrete span, in the spirit of the best concrete bridges in the early part of this century in this country and Europe, the results have not yet achieved a comfortable balance with the elegance of earlier spans across the Fort Point Channel. The four existing Channel bridges are almost a museum of elegant steel and iron engineering solutions

Figure III.1
New Bridge
alignment



III. New Bridge

III.1

CURRENT DESIGN (continued)

to the problems of movable spans. Further, these bridges were seen as objects of civic pride, and hence incorporate attitudes of municipal demonstrativeness in their design. The Massachusetts Department of Public Works (as agent for FHWA) is currently preparing to initiate Final Design for the New Bridge's abutments and long span; during Final Design, the City and MDPW intend to work together to ensure that the New Bridge's design is visually compatible with its existing neighbors and the New Bridge's status as a major public works project. It should be noted that when the New Bridge was first proposed and underwent preliminary design, the Fort Point Channel district had not yet attracted high public priority as an area of significant new private investment and public planning for public open space and other uses. Public initiatives such as Harborwalk, the Fort Point Channel Interim Planning Overlay District (IPOD) as well as private initiatives, and the BRA's Fort Point Channel South Boston Harborfront planning effort had not yet been proposed.

III.2

URBAN DESIGN OBJECTIVES

The BRA and MDPW have worked closely together to establish a series of objectives to ensure that the New Bridge will constitute a welcome and appropriate neighbor in the Fort Point Channel. The BRA's proposed urban design vision for the New Bridge draws on : (1) the design vocabulary of the existing bridges in the Fort Point Channel and others in the downtown area, (2) the urban design objectives for the Channel area and waterfront, and (3) the New Engineering

Figure III.2
Plan- South
Boston
abutment and
stairs to
Harborwalk
with underpass

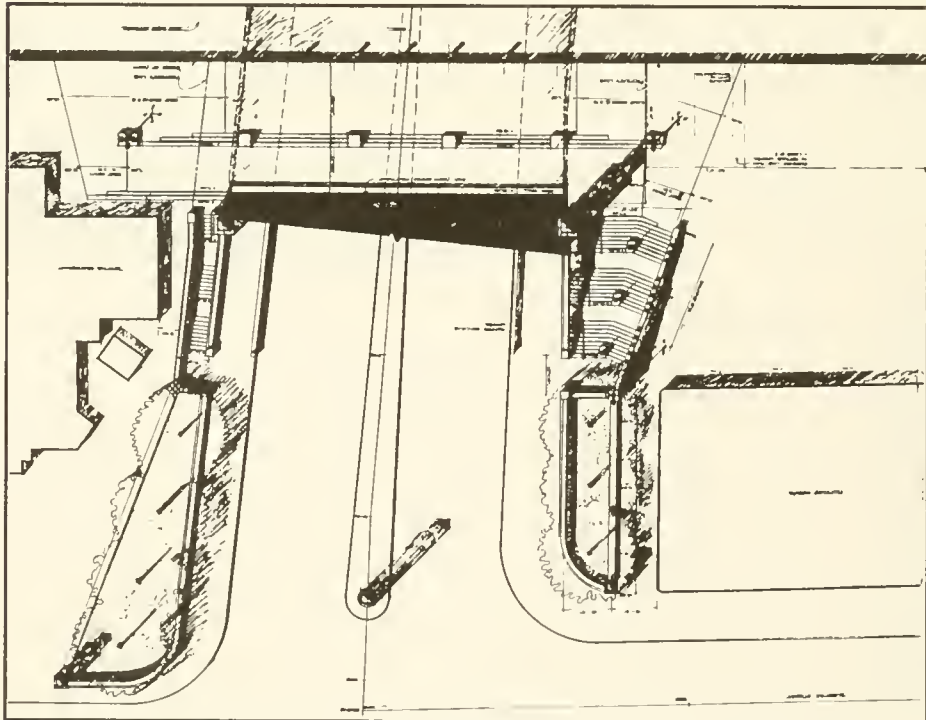
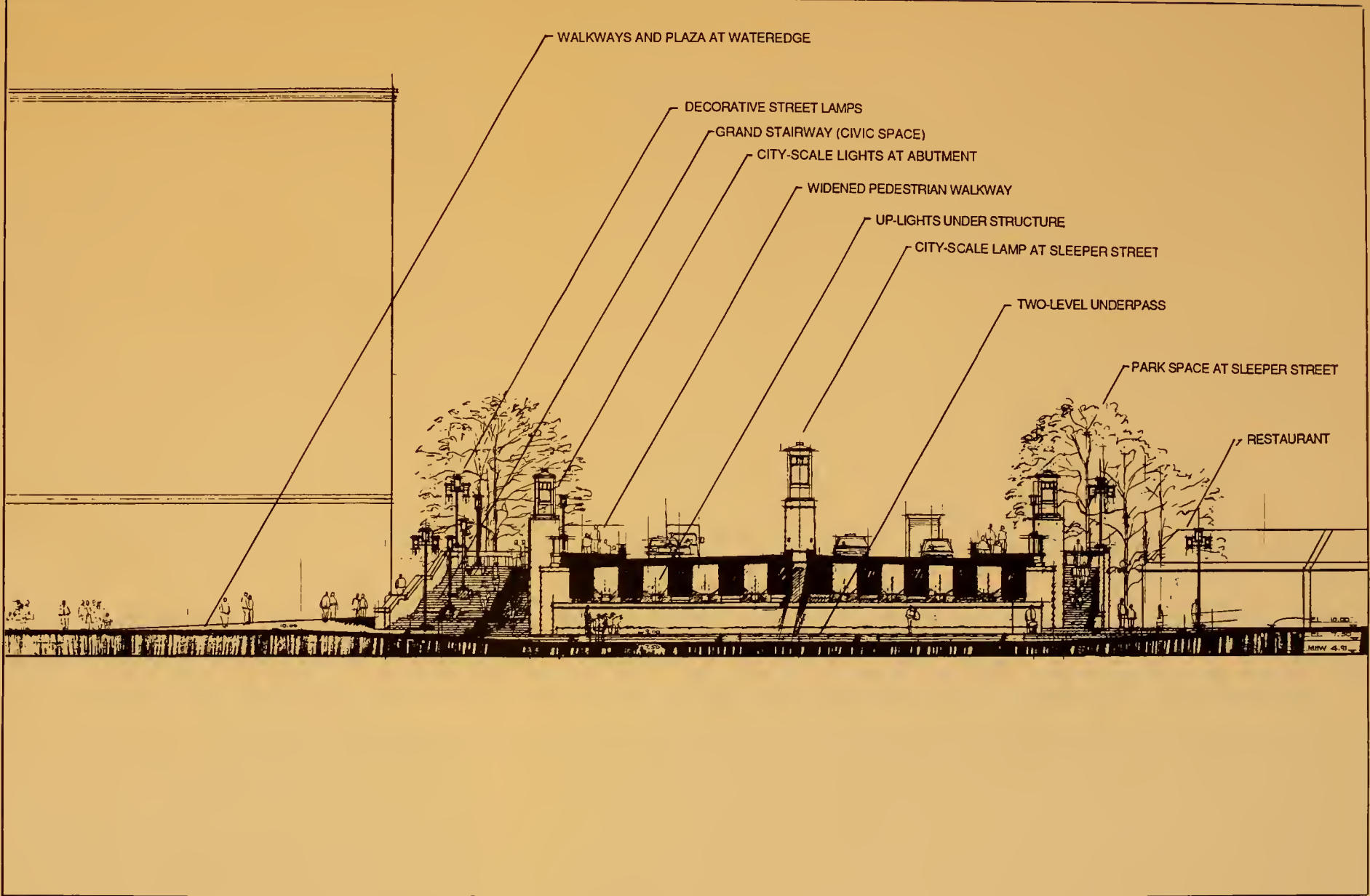


Figure III.3
Section through
New Bridge
showing
underpass at
South Boston
Harborwalk



III. New Bridge

Urban Design Objectives (continued)

characteristics of the New Bridge. In addition to ensuring compatibility with the vocabulary of the existing nearby bridges, the proposed design objectives are intended to generate an appropriate physical character and suitable expression of civic pride for the New Bridge which respects its role as a highly visible and significant link between downtown and the South Boston Harborfront and a major addition to the emerging new urban activity along the Fort Point Channel. The following concepts are intended to guide the final design of the Bridge:

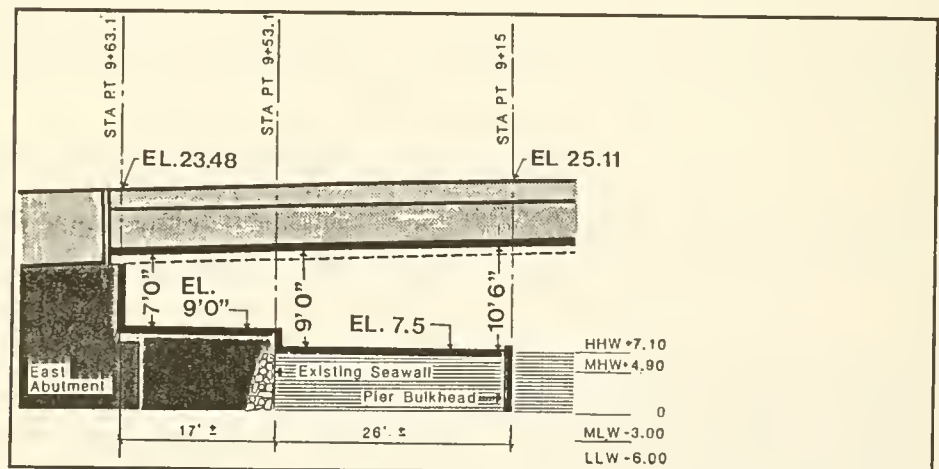
Connections to Harborwalk

Harborwalk, a continuous waterfront pedestrian way, is a central element in the City's efforts to provide major new public open space and accessibility around the Harbor. The New Bridge crosses Harborwalk at both its north and south abutments, potentially blocking the continuous walkway unless it is designed to accommodate through passage; the MDPW and BRA have been co-operating to ensure appropriate passage in a manner which encourages continuous pedestrian movement along Harborwalk.

South-side Harborwalk Passageway

The following recommendations (see Figures III.2, III.3) for the Bridge's south passageway reflect the role of this passageway as an essential connection in the Harborwalk system due to its position as a major point of pedestrian access to the Children's and Computer Museums from Downtown and South Boston. It also serves as the direct connection between two potentially active outdoor waterfront areas--Museum Wharf and Lobster Park.

Figure III.4
Pedestrian
underpass-
two-level
walkway pro-
posal



A. Provide a two-level walkway underneath the New Bridge: lower level to allow maximum clearance adjacent to the water's edge; higher level to provide visual articulation of the space under the Bridge and allow pedestrians and security vehicles to pass during periods when the lower walkway is wet.

South-side Harborwalk
Passageway (continued)

B. Provide appropriate clearance (minimum 10') at water's edge and at abutment (minimum 8').

C. Provide continuity for Harborwalk including unimpaired sight lines and consistent walkway materials

Specific Recommendations:

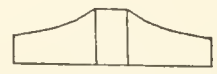
1. *Maintain full width of Harborwalk (min. 35') under Bridge*
2. *Provide clearances described above*
3. *Design two-level walkway which is fully integrated with design of Harborwalk at either side of the Bridge*
4. *Maintain a continuous line-of-sight, and normal horizon, from one side of the Bridge to the other (do not walk into a "hole")*

D. Utilize major structural and utility elements (e.g. lighting) to enhance the character of the passageway.

Specific Recommendations:

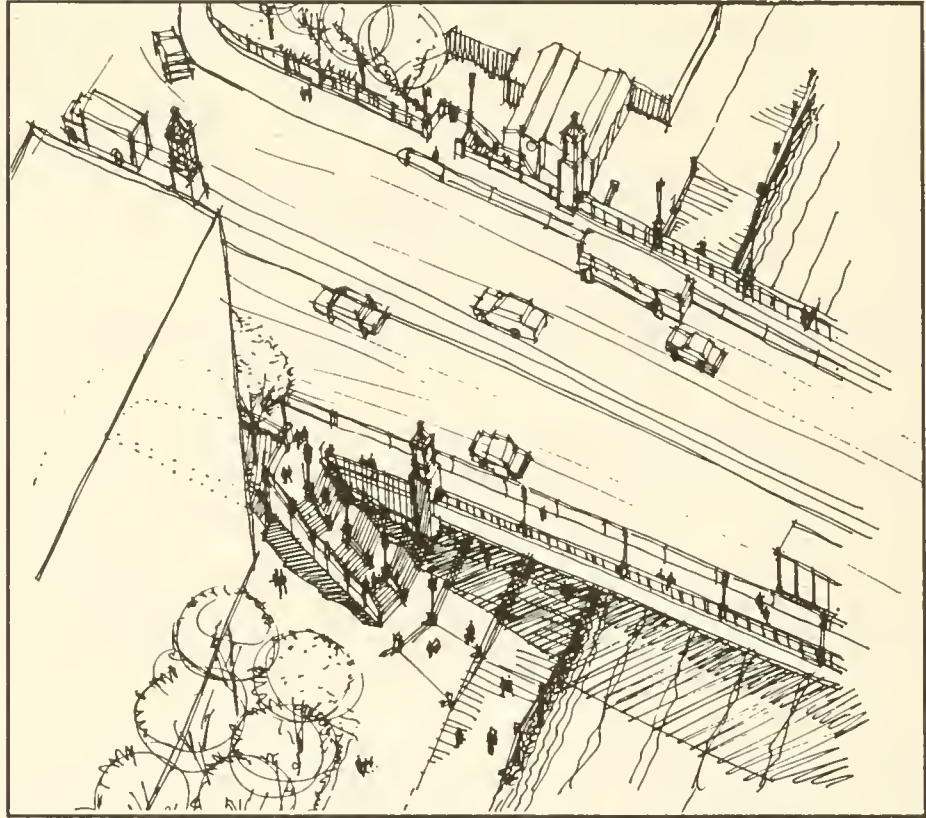
1. *Locate public art on the face of the abutment wall and possibly on other passageway surfaces; potential role for local artists/Fort Point Artists Association*
2. *Light the underside of the Bridge to emphasize the dramatic size of the beams and emphasize additional height between the beams*
3. *Utilize large, architecturally distinctive, light fixtures to provide visual interest for the passageway*
4. *Light the passageway on a 24 hour basis*
5. *Emphasize the rocker or other "joint" element where the bridge span meets the abutment*

E. Provide gently sloping walkways -- these gently sloping walkways will be easier to use (particularly during inclement weather), appear to be more natural elements to the urban landscape and thus avoid the sense of ramps "tacked onto" the Bridge and Lobster Park, and encourage broad use thus avoiding creation of clearly separate facilities for disabled persons.



South-side Harborwalk
Passageway (continued)

Figure III.5
South Boston
abutment-
bird's eye view
showing major
stair underpass
access



Specific Recommendations:

1. Walkway, maximum 5% slope to provide barrier-free access, from Sleeper Street, adjacent to the New Bridge, down to Harborwalk and Lobster Park

2. Continue same slope to the 7.5' elevation walkway through the passageway; this gentle slope will probably require taking 1,200 sq.ft. from Neptune Lobster which should be replaced elsewhere to ensure that Neptune Lobster's operations are not adversely impacted

F. South-side Stairway to Harborwalk

-Provide a **prominent stair connection to Harborwalk** which emphasizes the significance of Harborwalk as an important public open space system and amenity.

-Provide a **direct connection to a small public Lobster Park** located adjacent to new affordable housing and Neptune Lobster.

-Orient the stair toward the Channel to encourage pedestrians to walk down to the water's edge.

South-side Harborwalk
Passageway (continued)

- Utilize the **stairway** to create an appropriate the design character for the visually prominent south-side abutment.

Specific Recommendations:

1. *Stone or rusticated concrete, architecturally expressive, stairway from Bridge to Lobster Park portion of Harborwalk*

2. *Design of stairway should be architecturally integrated with abutment design and fully consistent with design expression of adjacent Harborwalk and Lobster Park*

G. Provide a second stairway on the other side of the bridge, adjacent to Victoria Station Restaurant.

Specific Recommendations:

1. *Utilize smaller, clearly "secondary" , stairway which does not compete visually with the more prominent stairway to Lobster Park*

Downtown Connection to
Harborwalk

-Provide an **at-grade crossing of the New Bridge at the point at which it crosses Harborwalk.**

Specific Recommendations:

1. *Provide 5% ramp connections down to Harborwalk on either side.*

Harborwalk

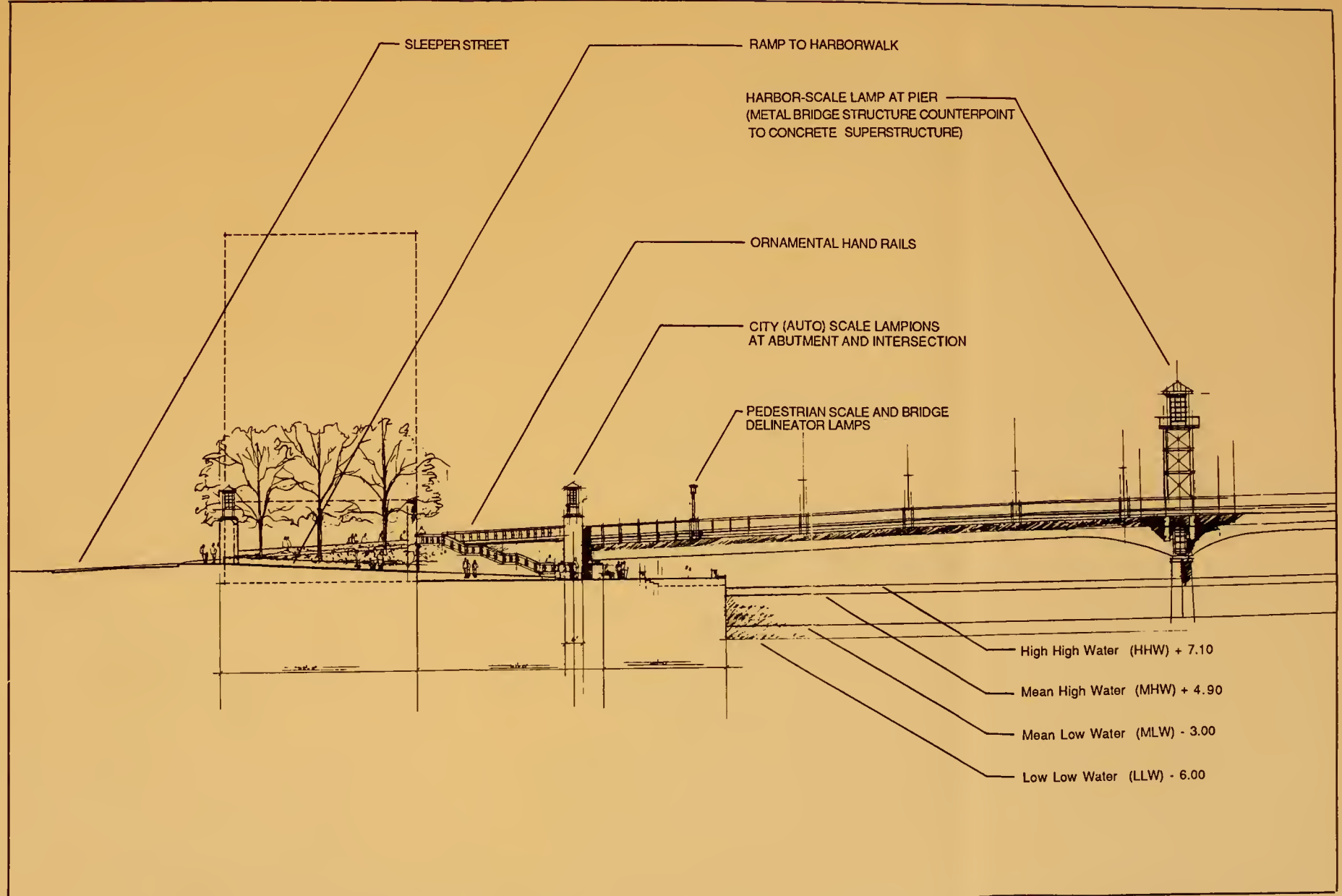
-Surfaces should include a mix of wood planking, located over water, and stone pavers inboard of the bulkhead.

-The water's edge should be marked by raised elements or bollards; railings may not be necessary.

-Trees and other plant materials should be incorporated into Lobster Park and other larger open space areas set back from the Channel's edge; they should not be located over water.



Figure III.6
Elevation to
midpoint-
new Northern
Avenue Bridge



Architectural Expression

-Establish **visual consistency with the Existing Northern Avenue Bridge and with other bridges in the Fort Point Channel** which are metal and display a high degree of articulation.

Specific Recommendations:

1. *Establish an appropriate character for the New Bridge by creation of a "metal" architecture which utilizes a vocabulary of painted steel or copper elements including lighting, railings, and partial sheathing of Bridge sides*

2. *Articulate the Bridge's profile, as viewed from the Channel's edge, in a manner which is compatible with the expressive character of nearby bridge profiles*

-Emphasize the **large-scale masonry character at the abutment landing points** in the tradition of urban bridges.

Specific Recommendations:

1. *Prominent stone or concrete abutments, marked by a large masonry beacon at either landing point*

Lighting

Provide **three scales of lighting:**

-**Pedestrian;**

-**Roadway** (traffic safety); and,

-**City/Harbor-scale--** night lighting for Bridge which marks the Bridge to the inner harbor and adjacent downtown.

Specific Recommendations:

1. *Hierarchy of lighting fixtures*

a) *pedestrian-scale fixtures, 14-16' height @ 25-35" oc*

b) *roadway-scale fixtures*

c) *major lighting fixtures which can be observed from the water and Channel edge, located at the abutments*

2. *Prominent abutment fixtures which contribute to establishing the Bridge's metal architecture*

III. New Bridge

Sidewalks

-Provide pull-out locations for bicycles and pedestrians, a limited number of places for pedestrians to observe boats and other Channel activity.

Specific Recommendations:

1. *Overlooks (approx. 6' wide) located at mid-span piers*

-Provide sidewalk paving consistent with Harborwalk materials (other than wood sections)-- recommendations to be determined.

Railings

-Provide handsome ornamental railings which, in addition to pedestrian-scale lighting, overlooks, and high quality paving, contribute to creating an attractive pedestrian zone.

-Design railings which are consistent with expression of the Bridge's metal architecture.

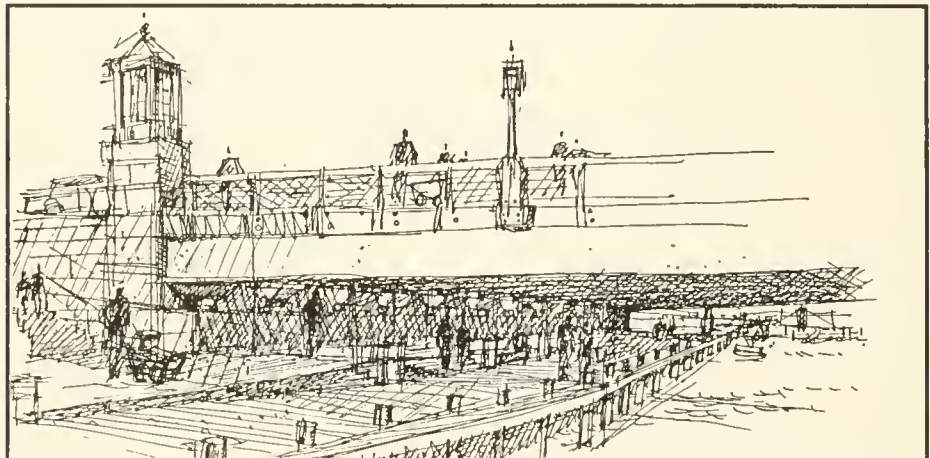
Specific Recommendations:

1. *Well designed railings which are transparent, utilize an attractive pattern, and in other ways make a strong contribution to creation of a well designed pedestrian zone*
2. *Railing design consistent with other architectural elements on the Bridge (see Architectural Expression above)*

Landscaping

-Provide a line of trees at both sides of the intersection of the New Bridge and Sleeper Street.

Figure III.7
Abutment and
Underpass (eye-
level sketch)



III.3 Project Status

A. Coast Guard Permit. Having addressed the issues of vertical clearance and other concerns to the satisfaction of the authorities, the MDPW (Massachusetts Department of Public Works) has expressed confidence that it will obtain the renewal of the Coast Guard permit by late June of 1988. This will follow a meeting in early June with the Admiral and the Coast Guard Bridge Engineer.

B. Substructure. Having obtained the required Coast Guard permit, the MDPW will re-advertise its contract for the New Northern Avenue Bridge substructure and await approval for the contract from the Federal Highway Administration. This process will take six weeks, yielding a mid-September bid opening. It is expected that substructure bids will be awarded within 2 to 3 weeks, that is, in November or December of 1988. Construction may then proceed immediately with the driving of piles, an operation which can occur in any season. It is estimated that the substructure will be completed within one year, by the end of 1989.

C. Superstructure and Connecting Roadways. Contract #2, which covers the new bridge superstructure and connecting roadways, is currently held up in a Federal Bond Issue and funds are expected to be released by July 1, 1988. It is likely that the design consultant who completed Phase I will be notified to proceed with this phase of design upon receipt of written approval by the MDPW. MDPW foresees that the design process will involve intensive coordination and design review with the BRA, with the Boston DPW, which is responsible for designing the connecting roadways, with Boston Sewer and Water, and with all other utilities affected by construction.

The superstructure and roadways are targeted to be completed within 18 months of release of federal funds. Current New Bridge opening is expected by MDPW to be late 1991.



IV.1

PHASE 2 RECOMMENDATIONS

Phase 2, the successor to this report, will build directly on the work and coordination with MDPW initiated by the BRA during Phase I. BRA staff and consultants will shape the conceptual proposals and feasibility studies in Phase I into a series of specific designs and actions for both the Existing and New Bridges. The principal tasks in Phase II are enumerated below:

IV.2

NEW BRIDGE

URBAN DESIGN CHARACTER

Work with MDPW to establish an appropriate, feasible, urban design vocabulary for the New Northern Avenue Bridge and establish appropriate connections to, and through- passage for, Harborwalk, including...

- detailed engineering and architectural development of Phase I conceptual proposals
- working sessions with MDPW staff and consultants
- schematic design proposals for New Bridge architecture
- schematic design proposals for Harborwalk connections, through- passage

This task will produce a series of specific, feasible proposals from the BRA to the MDPW implementing the BRA's objectives for the New Bridge and its relationship to Harborwalk.

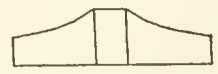
IV.3

EXISTING BRIDGE

RE-USE STRATEGY

Establish a re-use strategy for the Existing Northern Avenue Bridge which embodies the Bridge's full potential as a highly prominent urban design amenity, principal route for pedestrian access between downtown and the South Boston Harborfront, and major element of Harborwalk; the work will focus on creative private and public-sponsored activities and funding and will address the impact of incorporating High Occupancy Vehicle (HOV) traffic into a re-use strategy, including...

- a Concept Plan describing pedestrian access and specific guide lines for location/design of new structures on the Bridge and at the north and south landing points out to Atlantic Avenue and Sleeper Street.
- preliminary engineering feasibility analysis including major construction issues, costs, and timing
- illustrated materials to invite expressions of private and public interest
- potential implementation strategies

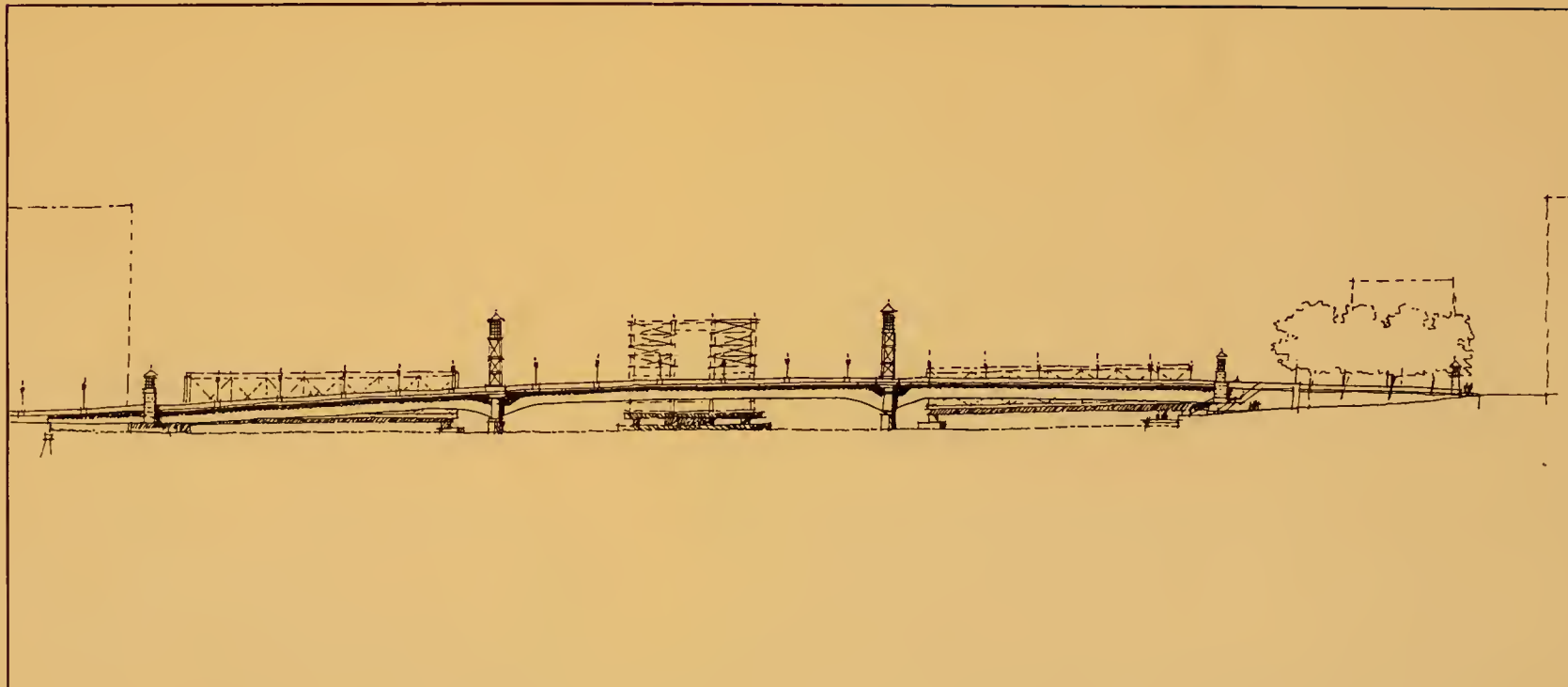


IV.4
HARBORWALK - FORT POINT
CHANNEL DEVELOPMENT

Establish a preliminary design for the Fort Point Channel portion of Harborwalk, focusing on its potential as a major public amenity for downtown and the emerging South Boston Harborfront area; design standards for Harborwalk will be used to demonstrate the high level of quality for the public environment in the vicinity of the New Bridge, strengthening the case for FHWA funding of an appropriate level of quality for the New Bridge; this work will produce a series of guidelines to direct, and ensure continuity in, subsequent design of specific elements of Harborwalk...

- detailed programs for Museum Wharf, Lobster Park (and housing site), and other major publicly-sponsored activities along Harborwalk
- detailed Concept Plan and Illustrated Plan (1"=40') for the Fort Point Channel Harborwalk
- design guidelines for Harborwalk

Figure IV.1
New bridge (design proposals)
with existing bridge behind,
scale comparison- view from
Congress Street
bridge towards
harbor



CLIENT

City of Boston, Raymond L. Flynn, Mayor

Boston Redevelopment Authority, Stephen F. Coyle, Director

Robert L. Farrell, Chairman

Joseph J. Walsh, Vice-Chairman

James K. Flaherty, Treasurer

Clarence J. Jones, Vice-Treasurer

Michael F. Donlan, Vice Chairman, Sub-Committee

Kane Simonian, Secretary

CONSULTANTS

Todd Lee / F R Clark Associates, Inc.
Architecture, Urban Design

David Dixon & Associates
Urban Design

Alistair McIntosh, ASLA
Landscape Architecture, Design Consultant

SSVK - Seelye, Stevenson, Value & Knecht
Bridge Engineering and Cost Estimating
Lawrence McCluskey, Senior Vice President

CONTRIBUTORS

Massachusetts Department of Public Works

Community Facilities Planning Group, Inc.

Greater Boston Chamber of Commerce

Children's Museum

Computer Museum

APPRECIATION

Mary Christina Boyd-Broemel of the BRA staff deserves special commendation for her efforts.

FT. PT. CHAN

N864

1988

AUTHOR

NORTHERN AVENUE BRIDGES

TITLE

STUDY

TY OF
IBRARY

DATE
LOANED

BORROWER'S NAME

BOSTON PUBLIC LIBRARY



3 9999 06314 940 3



